Capability vs. Capacity Resource Balancing
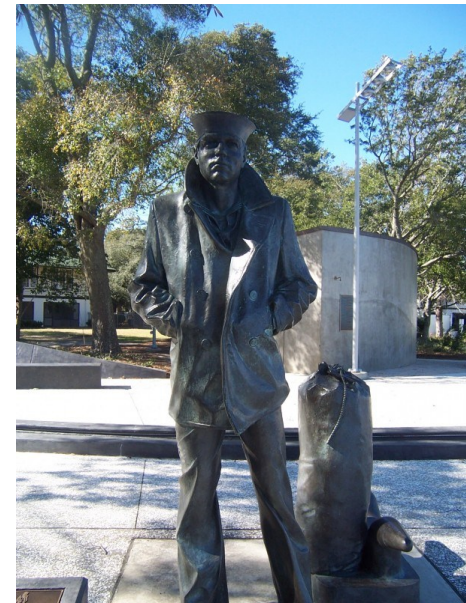
27 March 2012

Rear Admiral Tom Eccles

Chief Engineer

Naval Sea Systems Command

1. REPORT DATE **27 MAR 2012**	2. REPORT TYPE	3. DATES COVERED **00-00-2012 to 00-00-2012**
4. TITLE AND SUBTITLE **Capability vs. Capacity Resource Balancing**		5a. CONTRACT NUMBER
		5b. GRANT NUMBER
		5c. PROGRAM ELEMENT NUMBER
6. AUTHOR(S)		5d. PROJECT NUMBER
		5e. TASK NUMBER
		5f. WORK UNIT NUMBER
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) **Naval Sea Systems Command, Washington,DC,20376**		8. PERFORMING ORGANIZATION REPORT NUMBER
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)		10. SPONSOR/MONITOR'S ACRONYM(S)
		11. SPONSOR/MONITOR'S REPORT NUMBER(S)
12. DISTRIBUTION/AVAILABILITY STATEMENT **Approved for public release; distribution unlimited**		
13. SUPPLEMENTARY NOTES **Presented at : Combat Systems Symposium 2012: March 26-27, 2012, Sheraton National Hotel, Arlington, VA**		
14. ABSTRACT		
15. SUBJECT TERMS		

| 16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON
a. REPORT **unclassified**	b. ABSTRACT **unclassified**	c. THIS PAGE **unclassified**	**Same as Report (SAR)**	**10**	

Standards, Engineering, Technical Authority & Certification
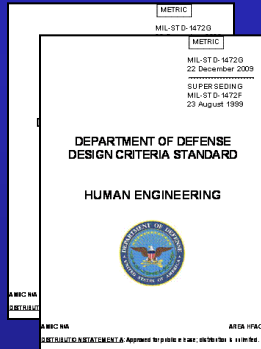
Development of DoD and Navy Specs and Standards, publications, tools and facilities

Technical Reviews / Certifications
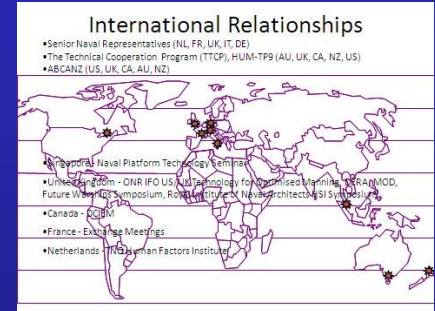
International Best Practices with Coalition Partners

Technical Authority rigor and discipline applied to specifications, standards, plans, processes, and products, including effective risk management.

Technical Warrant Holder Pyramid

TA
1 2 — } Engineering Mgrs
3 4
5 6 7 — } Lead Mgrs
8 9 10
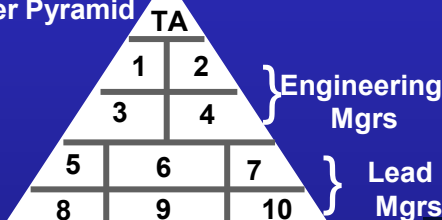
Ensure technical competency, expertise and infrastructures are maintained

Usable, Maintainable, Capable, Integrated, Safe & Reliable Warfare Systems

Prioritize gaps and risks; provide options and mitigations

Technical Authority
Integrated Warfare Systems

INNOVATION

- **Academia, UARCs**
- **Industry**
- **Warfare Centers**
- **ONR/DARPA**
- **SBIR/SST**
- **Aegis BMD**
- **Aegis Ashore**
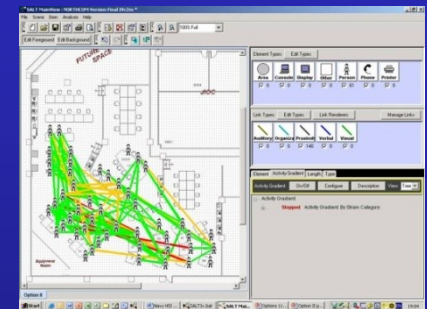- **FLEET**

Detect

Control

Engage

SEWIP

CEC

SSDS

MK 41VLS

Sea Sparrow

Amphib

AN SQQ89

SM-2 / SM-6

155+ Programs: ACAT I, ACAT II, ACAT III, ACAT IV, Non ACAT, RDT&E

SPS-49 Radar

Aegis Combat System

CVN 72

Strike Force Integration & Interoperability

E2 Hawkeye

GCCS

ESSM

Warfare Systems Certification

- **NAVSEA**
- **SPAWAR**
- **NAVAIR**

DDG 1000

Band ar

DDG 51

FLEET Human Systems Integration, CAPS & LIMS, TIC TECHAID, Workaround Workload

Naval Warfare Systems Certification Policy (NWSCP)

Warfare Systems Certification

NWSCP

NAVAIRINST 5230.20
SPAWARINST 5234.1
NAVSEAINST 9410.2

- ◆ **Approved 18 July 2005**
- ◆ **Multi-SYSCOM Policy**
  - NAVAIRINST 5230.20
  - SPAWARINST 5234.1
  - NAVSEAINST 9410.2
- ◆ **Supersedes G&PP 99-05**

- **Policy Mandate:**
  - CFFC 032037Z MAY 04 - COMFLTFORCOM C5IMP POLICY (Superseded by COMFLTFORCOM POLICY 4720.3B, Signed Oct 2008) Assigns NAVSEA 06 (now SEA 05H) Certification Responsibility and Authority for Platforms and Strike Groups

- **Formally establishes the process and provides the required steps for certifying Warfare Systems for Navy Surface Ships, providing required information to support FLT C5IMP Baseline Decisions**

- **Primary method for ensuring Warfare Systems are fully developed, mature, reliable, and have completed System, Integration, and Strike Force Level Testing prior to delivery and operational use during Deployment**

- **Identifies the specific information (OQE) that key Stakeholders must provide in support of the Platform Certification Process**

October 2011 Update

New Joint SYSCOM Naval Warfare Systems Certification Policy

- Incorporates recommendations from 2011 Certification Task Force and the five Task Force Pillars which include
    - _alignment_ with the Fleet's C5I Modernization Policy,
    - _integration_ of technical authority,
    - _improvements_ in the definition and role of _interoperability_,
    - delineation and _alignment_ with the combat system and element certification instructions, and
    - clearly defined _certification criteria_ requiring _objective quality evidence as proof that criteria are met._
- Improved problem reporting - more specific prioritization, frequency, and risk level definitions providing consistency in certification evaluations.
- Approved by stakeholders USFFC, CPF, COMOPTEVFOR, NAVAIR, NAVSEA, SPAWAR, PEO C4I, PEO IWS, PEO T, PEO Ships, PEO LCS, PEO Carriers, PEO Subs, SEA 21, and OPNAV

Automated Testing and Retest (ATRT)

SBIR III	SBIR III	SBIR III	SBIR III	SBIR III
Warfare Systems Integration and Interoperability Test (WSIIT) (POP: Sept 11-Sep 12) Develop a Strategy and deliver a "self-throttling" test capability for use in WSIIT for Ship Self Defense System.	**AEGIS Analysis** (POP: Aug 11 – Sept 12) Apply ATRT to at-sea testing analysis to extend coverage of AEGIS 3.2 requirements (combat system level) and update scenario manager to assist with land-based testing for Advanced Capability Build (ACB) 08 and ACB 12 baselines.	**Integrated Common Processor (ICP) / Acoustic Rapid COTS Insertion (A-RCI)** (POP: Sept 11 – Sep 12) ICP and A-RCI use common software components from submarine and surface USW systems. PMS 485 and 401 developed a combined plan to automate reliability tests that include: Performance Verification Tests (PVTs), System Services, and Data Storage.	**LCS Mission Module (MM)-Seaframe Interface Test** (POP: July 11 – Sep 12) Apply ATRT to automate message-based interface testing between LCS MM and Seaframe Combat Management System (CMS).	**Submarine Warfare Federated Tactical Systems (SWFTS)** (POP: Sept 11 – Sep 12) Automate SWFTS Integration and System Level tests for Advance d Process Build (APB)/Technical Insertion (TI) upgrades.

Shortens the test and analysis execution timeline

Maintains and/or improves software product quality

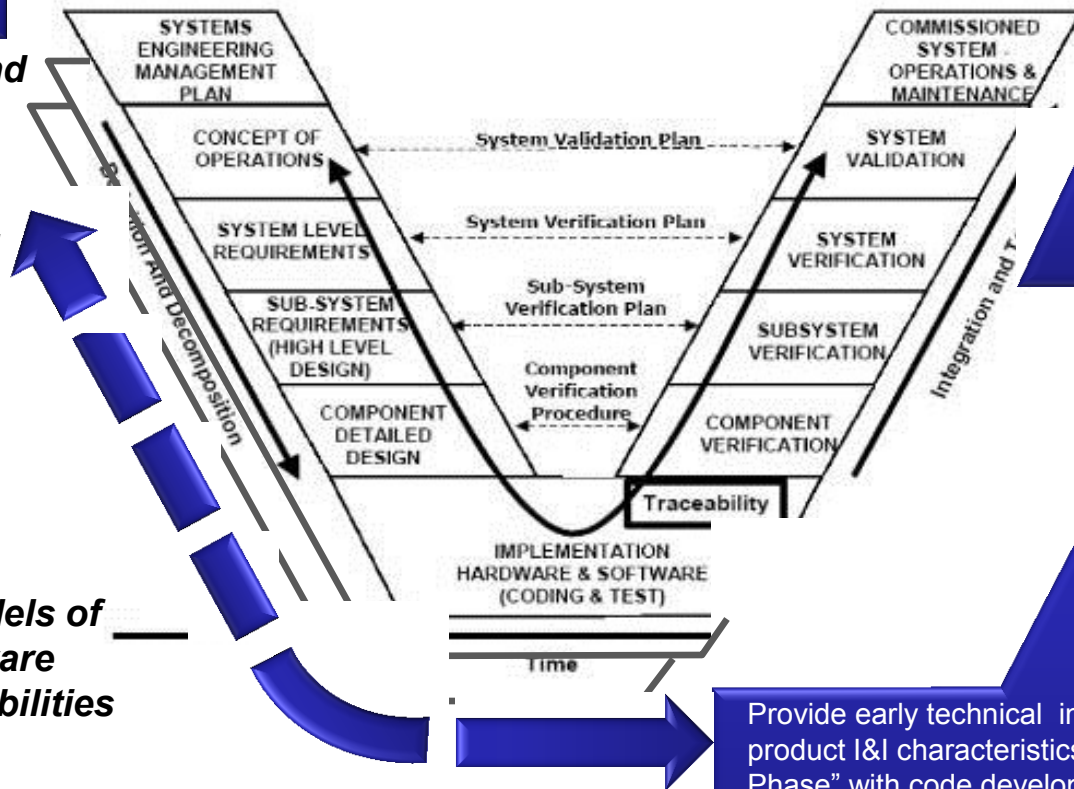**Reduces overall system development testing costs**

Automated Test and Retest (ATRT) Virtual Test Bed

Mission Engineering

Assess Integration and Interoperability (I&I) Requirements in Current and Future Architectural Mission Threads

Classical I&I "Testing"

COMPTUEX BGSIT DEP & Link Cert

Exercise Models of New Software Enabled Capabilities

ATRT Virtual Test Bed

Provide early technical insight of product I&I characteristics "In Phase" with code development.

Tactical Software Running On "Virtual Machines"

ATRT– Automated Test and Retest
COMPTUEX – Composite Unit Training Exercise
DEP – Distributed Engineering Plant
DGSIT – Deploying Group System Integration Testing

ATRT Virtual Test Bed Provides the Software Development Environment (Coding) for an Early (in-stride) I&I Assessment
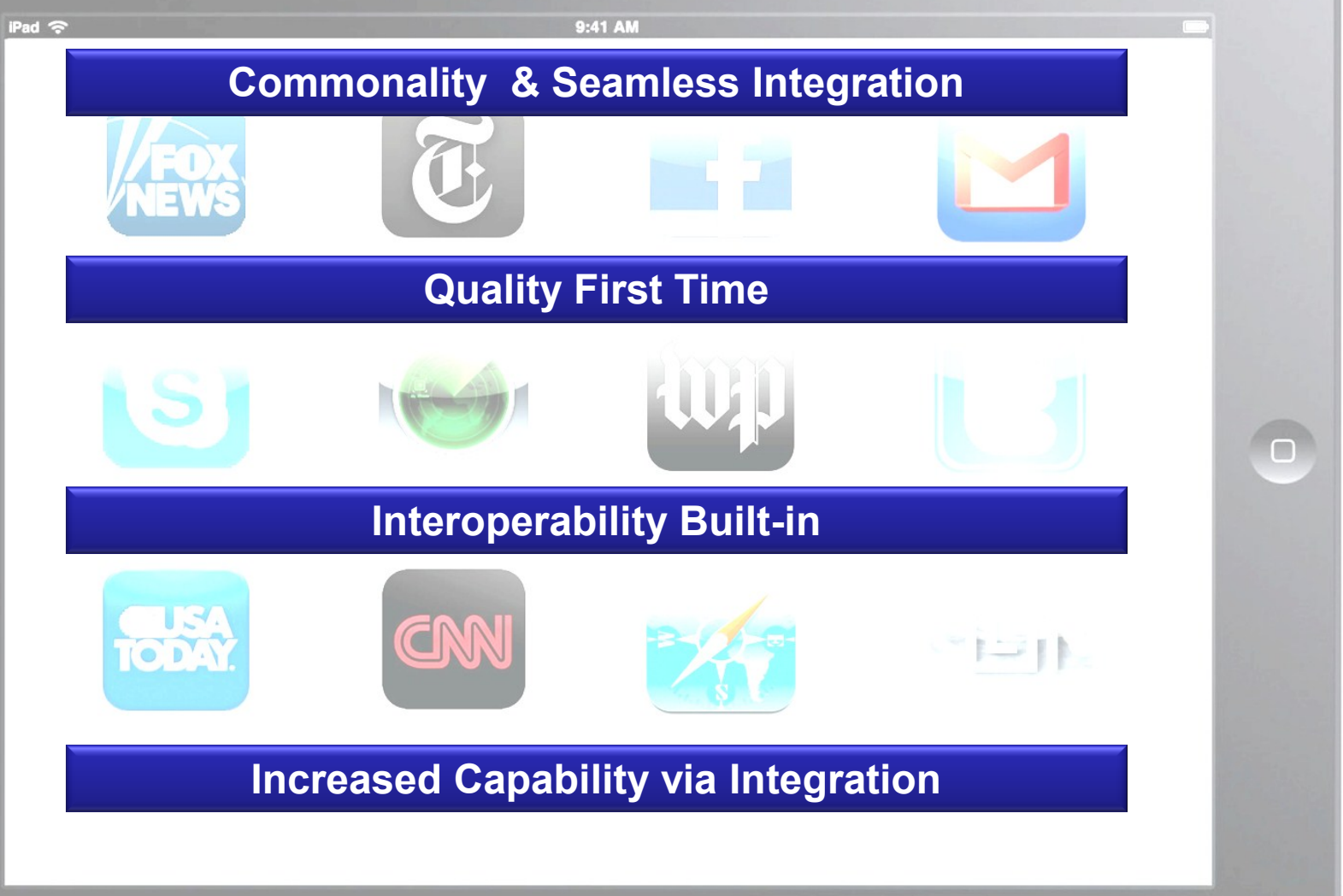
Strike Force Interoperability Land Based Testing
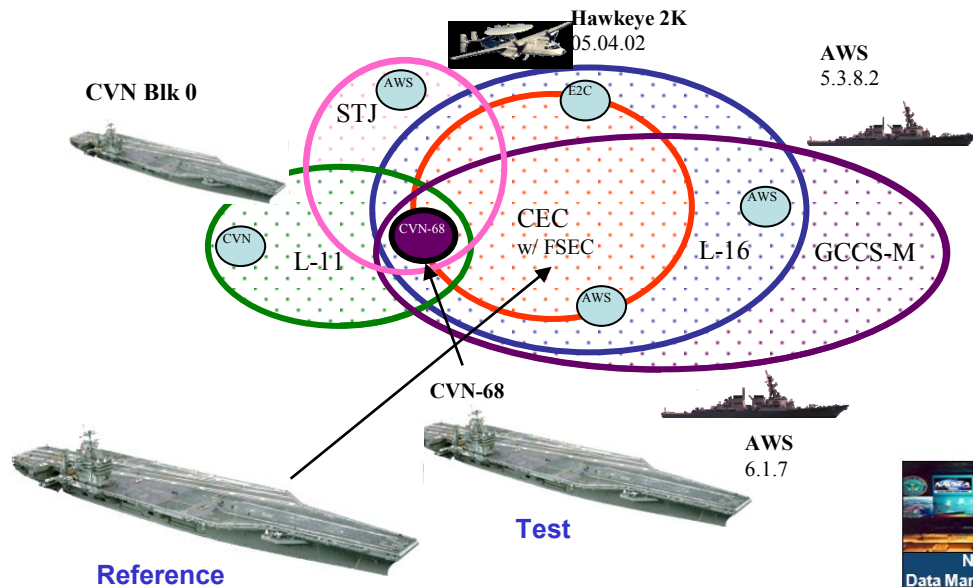
Distributed Engineering Plant (DEP) replicates a Strike Group for land based testing

Land based testing essential for characterization of Strike Group Interoperability prior to delivery to the fleet.

Naval Sea Systems Command
Naval Systems Engineering Directorate

Commonality & Seamless Integration

Quality First Time

Interoperability Built-in

Increased Capability via Integration

Standards, Engineering, Technical Authority & Certification